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Carotid Artery Revascularisation Following Neck Irradiation: Immediate and Long-Term Results

Magne J.L., Pirvu A., Sessa C., Cochet E., Blaise H., Ducos C. Eur J Vasc Endovasc Surg 2012;43:4-7.

Objective: Carotid artery stenosis is a complication of neck irradiation. We describe the immediate and long-term results of surgical treatment.

Methods: This was a retrospective single centre study. From 1996 to 2009, 24 consecutive patients who had in the past received neck radiation therapy (mean 12 years, 1–41 years) underwent 27 primary carotid artery revascularisation procedures. Six patients (23%) had previous radical neck dissection, three permanent tracheostomies and one cervicoplasty with pectoral muscle flap. Indications for surgery included symptomatic (five transient ischaemic attacks (TIAs), four strokes; 34%) and asymptomatic (18 patients, 66%) stenosis. Four patients had occlusion of the contralateral carotid. General anaesthesia without shunting was used with measurement of stump pressure. Carotid interposition bypass grafting included 23 vein grafts and three Polytetrafluoroethylene (PTFE) grafts.

Results: No perioperative deaths or central neurological events occurred. Three patients suffered transient cranial nerve injuries. Eleven patients died during follow-up, mean interval of 28 months (range 6–120 months), of causes unrelated to surgery. Five patients had recurrent bypass stenosis with one TIA and one stroke. All other surviving patients remained asymptomatic.

Conclusion: Despite no comparative study as evidence, we think that the perioperative risk of stroke is at least comparable with the risk encountered for angioplasty procedures.

Evaluation of Radiation during EVAR Performed on a Mobile C-arm

Maurel B., Sobocinski J., Perini P., Guillou M., Midulla M., Azzaoui R., Haulon S. Eur J Vasc Endovasc Surg 2012;43:17-22.

Background: The aim of this study was to evaluate radiation exposure during aortic endovascular aneurysm repair (EVAR) on a mobile C-arm using a low dose and pulse mode.

Methods: We performed a retrospective analysis of a prospectively maintained database on patients undergoing EVAR. Indirect dose measurements of dose area product (DAP, mGy m^2) calculated by the C-arm (OEC 9900MD), fluoroscopic time (FT), type of procedure, contrast media volume and body mass index were analysed.

To confirm the correlation between direct and indirect DAP measurements, direct dose was measured with radiochromic films on a sample of 15 patients. Film grey level response was calibrated according to a reference dose measurement performed with a calibrated dosimeter. DAP and peak skin dose (PSD, Gy) were measured on each film. Correlation between DAP from direct and indirect measures, and between DAP and PSD, were analysed.

Results: From January 2009 to April 2011, 335 patients underwent EVAR. Complete data were available on 301 procedures including 188 bifurcated, 54 fenestrated, 28 thoracic, 20 branched and 11 aorto-uni-iliac endografts implantation. The respective median FT and DAP was 9.36 min (1.8–67) and 3 mGy m^2 (0.4–28); 27.2 min (2–69) and 7.3 mGy m^2 (1.2–29); 7.75 min (1.2–19.1) and 2 mGy m^2 (0.3–11); 42.98 min (2.4–95.4) and 15.95 mGy m^2 (2.98–77.7); 6.2 min (0.5–36.3) and 2 mGy m^2 (0.3–11). Direct DAP measurement on radiochromic films was strongly correlated with DAP values provided by the C-arm ($r = 0.98$). PSD correlated weakly with DAP. DAP was significantly increased ($p < 0.001$) in patients with a body mass index >30. Contrast media volume was significantly increased in the branched endograft group.

Conclusion: Indirect DAP values measured by the C-arm are accurate to evaluate radiation exposure. Compared to the literature, our values for standard procedures are significantly decreased by the usage of low dose and pulse mode. DAP for fenestrated and branched procedures was comparable to published DAP values with standard procedures using a regular fluoroscopic mode.

The Cardiac Cycle is a Major Contributor to Variability in Size Measurements of Abdominal Aortic Aneurysms by Ultrasound

Grøndal N., Bramsen M.B., Thomsen M.D., Rasmussen C.B., Lindholt J.S. Eur J Vasc Endovasc Surg 2012;43:32-5.

Aim: The objective of the study was to evaluate the impact of the cardiac cycle on ultrasound measurements of abdominal aortic aneurysm (AAA) diameters.

Methods: In total, 603 AAAs detected by screening were investigated with respect to the maximal systolic and diastolic anterior–posterior aortic diameters during the cardiac cycle using recorded ultrasound video sequences.

Results: On average, the systolic AAA diameter was 41.60 mm, and the diastolic AAA diameter was 39.63 mm with a paired mean difference at 1.94 mm ($p < 0.0001$). No association between aneurysmal size and difference in systolic and diastolic size was noted. The mean difference and variability between two observers, one measured during peak-systole and the other measured during end-diastole, was 2.65 and 2.21 mm, respectively, as compared with 0.86 and 1.52 mm, respectively, when both were measured during the peak of systole. The intraobserver variability was 0.94 during systole, 1.18 during diastole and 1.94 mm when systole and diastole measurements were combined.

Conclusion: The lack of a standardised measurement of the AAA diameter during the cardiac cycle is a potential major contributor to the variability in ultrasonography measurements.

Laparoscopic Surgery for Coeliac Artery Compression Syndrome: Current Management and Technical Aspects

Berard X., Cau J., Déglise S., Trombert D., Saint-Lebes B., Midy D., Corpataux J.M., Ricco J.B. Eur J Vasc Endovasc Surg 2012;43:40-4.

Objectives: The study aims to assess the feasibility and midterm outcome of trans-peritoneal laparoscopy for coeliac artery compression syndrome (CACS).

Design: Retrospective chart review involving four European vascular surgery departments and two surgical teams.

Materials and methods: charts for patients who underwent laparoscopy for symptomatic CACS between December 2003 and November 2009 were reviewed. Preoperative computed tomography (CT) angiography and postoperative duplex scan and/or CT angiography were performed.

Results: Eleven consecutive patients (nine women) with a median age of 52 years (interquartile range: 42.5–59 years) underwent trans-peritoneal laparoscopy for CACS. All patients had a history of postprandial abdominal pain; weight loss exceeded 10% of the body mass in eight cases. Preoperative CT angiography revealed coeliac trunk stenosis >70% in all cases. One patient had additional aortitis and inferior mesenteric artery occlusion, while another patient presented with an occluded superior mesenteric artery. Two conversions occurred (one difficult dissection and one aorto-hepatic bypass needed for incomplete release of CACS). The median blood loss was 195 ml (range: 50–900 ml) and median operative time was 80 min (interquartile range: 65–162.5 years). Symptoms improved immediately in 10/11 patients (no residual stenosis) while one remained unchanged despite a residual stenosis treated by a percutaneous angioplasty. Symptoms reappeared in one patient due to coeliac axis occlusion. The mean follow-up period was 35 ± 23 months (range: 12–78 months).

Conclusion: Our study demonstrates that trans-peritoneal laparoscopy for treating median arcuate ligament syndrome is safe and feasible. Additional patients and a longer follow-up are needed for long-term assessment of this laparoscopic technique.

Infrainguinal Bypass for Peripheral Arterial Occlusive Disease: When Arms Save Legs

Vauclair F., Haller C., Marques-Vidal P., Déglise S., Haesler E., Corpataux J.-M., Saucy F. Eur J Vasc Endovasc Surg 2012;43:50-5.

Objectives: Determine if arm veins are good conduits for infrainguinal revascularisation and should be used when good quality saphenous vein is not available.

Design: Retrospective study.

Materials and methods: We evaluated a consecutive series of infrainguinal bypass (IB) using arm vein conduits from March 2001 to December 2006.We selected arm vein by preoperative ultrasound mapping to identify suitable veins. We measured vein diameter and assessed vein wall quality. We followed patients with systematic duplex imaging at 1 week, 1, 3, 6 and 12 months, and annually thereafter. We treated significative stenoses found during the follow-up.

Results: We performed 56 infrainguinal revascularisation using arm vein conduits in 56 patients. Primary patency rates at 1, 2 and 3 years were 65%, 51% and 47%. Primary assisted patencies at 1, 2 and 3 years were 96%, 96% and 82%. Secondary patency rates at 1, 2 and 3 years were 92%, 88% and 88%. The three-year limb salvage rate was 88%.